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CLAIMS

1.   A method for controlling the transmission flow rate of data bits in a data bit transfer session from a serving entity to a client, the session involving bit transfer over a
5   wireless communications link, the method comprising:

setting up the session by providing a radio control node to establish flow rate parameters relating to the wireless link, wherein the setting up includes:

resolving addressing between the radio control node and the serving entity,

10   sending rate control configuration parameters to the radio control node,

generating in the radio control node an initial rate control (RC) message including initial flow rate parameters,

sending at least one initial rate control message to allow the
15   serving entity to set initial transmission rates for the session in accordance with at least one of the initial flow rate parameters;

monitoring the wireless communication link;

based on monitoring, sending new flow rate parameters so that the serving entity can update the transmission rate of the session in accordance with the new rate
20   control parameters.

2.   The method of claim 1 further comprising examining, by the radio control node, every message header in the flow between the client and the serving entity to obtain rate control configuration parameters within the examined messages.
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3.   The method of claim 2 further comprising:

activating an intermediate layer information set between the client and a gateway node;

sending, by the gateway node, an application layer message to the serving
30   entity, including the IP address of the client;

receiving, by the radio control node, a radio control initiation message from the serving entity, including the IP address of the serving entity to allow the radio control node to send messages to the serving entity; and

sending, by the radio control node, a rate control message to the serving entity, wherein the rate control message contains flow rate parameters.

4.   The method of claim 1 further comprising:

    initiating a session, by the client, by sending an application layer command to the serving entity,

    sending, by the serving entity, a transport layer command to the client,

    examining, by the radio control node, headers of transport layer commands from the serving entity to obtain rate control configuration parameters within the transport layer command,

    sending, by the radio control node, a rate control feed back in response to finding rate control configuration parameters in the transport layer command.

5.   The method of claim 1 wherein the setting up further comprises:

    initiating the session according to an application level protocol,

    receiving, by the radio control node, the rate control configuration parameters according to a first intermediate layer protocol;

    tying the first intermediate layer control configuration parameters to parameters according to a second intermediate layer protocol;

    generating the tied parameters; and

    including the tied parameters in the initial rate control message.

6.   The method of claim 1 wherein the setting up further comprises:

    initiating the session according to an application level protocol,

    receiving, by the radio control node, the rate control configuration parameters according to an intermediate layer protocol;

    sending the initial rate to the rate control IP address specified in the configuration parameters.

7.   The method of claims 5 or 6 further comprising activating an intermediate layer information set between the client and a serving support node in the network.

8.   The method of claim 1 wherein the serving entity is an application server or a streaming server.

9.   The method of claim 1 wherein the serving entity is a proxy in communication with an application server.

10.   The method of claim 1 wherein the client is a mobile station.

11.   The method of claim 1 wherein the rate control configuration parameters are selected from the group consisting of a rate control method indicator, a rate control identifier, a rate control IP address, and rate control port numbers.

12.   The method of claim 1 wherein the flow rate parameters are selected from the group consisting of a rate control identifier and a bit rate.

13.   The method of claim 1 wherein the application layer protocol is the Real Time Streaming Protocol (RTSP), the first intermediate protocol is Radio Access Network Application Part (RANAP), and the second intermediate protocol is Iu UP or GTP over IP.

14.   The method of claim 1 wherein the session occurs within a network which is a Universal Mobile Telephony System (UMTS), a General Packet Radio Service (GPRS) system, or a WLAN network.

15.   A method for negotiating the transmission flow rate of data bits in a data bit transfer session from a first mobile entity to a second mobile entity, the session involving bit transmission over at least one wireless communications link, the method comprising:

     providing a first radio control node in communication with the first mobile entity for controlling the bit transmission rates of a first radio link to the first mobile entity,

     providing a second radio control node in communication with the second mobile entity, for controlling bit transmission rates of a second radio link to the second mobile entity,

resolving addressing between the first radio control node and the second radio control node to allow communication between the first radio control node and the second radio control node,

sending rate control parameters for the first link to the second radio control node,

sending rate control parameters for the second link to the first radio control node,

matching the rate control parameters to obtain an actual bit transmission rate,

sending an indicator of the actual bit transmission rate to the first mobile entity and to the second mobile entity so that the bit transmission can occur at the bit transmission rate.

16.   The method of claim 15 wherein the resolving further comprises

initiating a session by sending set up commands in accordance with an application layer protocol between the first mobile entity and the second mobile entity,

establishing an intermediate layer information set between the first mobile entity and a serving node,

receiving, by the first radio control node, rate control configuration parameters for the second mobile entity according to a first intermediate layer protocol; and

receiving, by the second radio control node, rate control configuration parameters for the first mobile entity according to a first intermediate layer protocol.

17.   The method of claim 16, further comprising:

examining, by the first radio control node, the headers of messages addressed to the first mobile entity to obtain the available transmission rates for the second radio link, and

examining, by the second radio control node, the headers of message addressed to the second mobile entity to obtain the available transmission rates for the first radio link.

18.   The method of claim 15 further comprising:

providing a proxy whereby all messages intended to received by the first mobile entity from the second mobile entity, all messages received by the second mobile entity from the first mobile entity, are sent through and forwarded on by the proxy.

5 19. The method of claim 18, further comprising:

examining, by the first radio control node, the headers of messages addressed to the first mobile entity to obtain rate control configuration parameters relating to the second mobile entity, and

examining, by the second radio control node, the headers of message addressed
10 to the second mobile entity to obtain rate control configuration parameters relating to the first mobile entity.

20. The method of claim 15 further comprising providing a first proxy whereby all messages sent by the first mobile entity to the second mobile entity, all messages sent
15 by the first radio control node to the second radio control node, are sent to and forwarded on by the first proxy.

21. The method of claim 20 further comprising providing a second proxy whereby all messages sent by the second mobile entity to the first mobile entity, and all messages
20 sent by the second radio control node to the first radio control node are sent to and forwarded on by the second proxy.

22. The method of claims 15 through 21 wherein the application layer protocol is a Session Initiation Protocol, the first intermediate layer protocol is Radio Access Network
25 Application Part (RANAP), and the second intermediate layer protocol is Iu UP.

23. A method for controlling the transcoding rate of a media gateway during a data bit transfer session from the media gateway to a client, the bit transfer session involving bit transfer over a wireless communications link, the method comprising:
30 setting up the session by providing a radio control node to establish transcoding rate parameters relating to the wireless link, wherein the setting up includes:

resolving addressing between the radio control node and the media gateway,

sending rate control configuration parameters to the radio control node,

5   generating in the radio control node an initial rate control message including initial transcoding rate parameters,

sending at least one initial rate control message so that the media gateway can set initial transcoding rates for the session in accordance with at least one of the initial transcoding rate parameters;

10   monitoring the wireless communication link;

based on monitoring, sending new transcoding rate parameters so that the media gateway can update the transmission rate of the session in accordance with the new transcoding rate parameters.

15   24.   The method of claim 23 further comprising examining, by the radio control node, every message header in the flow between the client and the media gateway to obtain rate control configuration parameters within the examined messages.

25.   The method of claim 24 further comprising:

20   activating an intermediate layer information set between the client and a gateway node in the network;

sending, by the gateway node, an application layer message to the media gateway, including the IP address of the client; and

receiving, by the radio control node, a rate control initiation message, including

25   the IP address of the media gateway to allow the radio control node to send messages to the media gateway.

26.   The method of claim 23 further comprising:

initiating a session, by the client, by sending an application layer command to

30   the media gateway,

sending, by the media gateway, a transport layer command to the client wherein the transport layer command includes rate control configuration parameters; and

examining, by the radio control node, the headers of transport layer commands to obtain rate control configuration parameters within the transport layer commands.

27.   The method of claim 23 wherein the setting up further comprises:
5   initiating the session according to an application level protocol,
        receiving, by the radio control node, the rate control configuration parameters according to a first intermediate layer protocol;
        tying the first intermediate layer control configuration parameters to parameters according to a second intermediate layer protocol;
10   generating the tied parameters; and
        including the tied parameters in the initial rate control message.

28.   The method of claim 23 wherein the setting up further comprises:
        initiating the session according to an application level protocol,
15   receiving, by the radio control node, the rate control configuration parameters according to an intermediate layer protocol;
        sending the initial rate to the rate control IP address specified in the configuration parameters.

20 29.   The method of claims 27 or 28 further comprising activating an intermediate layer information set between the client and a serving support node in the network.

30.   The method of claim 23 wherein the client is a mobile station.

25 31.   The method of claim 23 wherein the rate control configuration parameters are selected from the group consisting of a rate control method indicator, a rate control identifier, a rate control IP address, and rate control port numbers.

32.   The method of claim 23 wherein the transcoding rate parameters are selected
30 from the group consisting of a rate control identifier and a bit rate.

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33.   The method of claim 23 wherein the application layer protocol is the SIP [Session Initiated Protocol], the first intermediate protocol is Radio Access Network Application Part (RANAP), and the second intermediate protocol is Iu UP.

5   34.   The method of claim 23 wherein the session occurs within a network which is a Universal Mobile Telephony System (UMTS), a General Packet Radio Service (GPRS) system, or a WLAN network.